

Use of a Symptom Scale Based on Degree of Functional Impairment for Acute Concussion

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Abstract : Concussion is diagnosed clinically using a comprehensive history and exam, supported by ancillary testing. Frequently, symptom checklists are used as part of the evaluation of concussion. Existing symptom scales are based on a subjective Likert scale, without relation of symptoms to clinical or functional impairment. This is a retrospective review of 133 patients under age 30 seen in an outpatient neurology practice within 30 days of a probable or definite concussion. Each patient completed 2 symptom checklists at the initial visit - the SCAT-3 symptom evaluation (22 symptoms, 0-6 scale) and a scale based on the degree of clinical impairment for each symptom (22 symptoms, 0-3 scale related to functional impact of the symptom). Final clearance date was determined by the treating physician. 60.9% of patients were male with mean age 15.7 years (SD 2.3). Mean time from concussion to first visit was 6.9 days (SD 6.2), and 101 patients had definite concussions (75.9%), while 32 were diagnosed as probable (24.1%). 94 patients had a known clearance date (70.7%) with mean clearance time of 20.6 days (SD 18.6) and median clearance time of 19 days (95% CI 16-21). Mean total symptom score was 27.2 (SD 22.9) on the SCAT-3 and 14.7 (SD 11.9) for the functional impairment scale. Pearson's correlation between the two scales was 0.98 ($p < 0.001$). After adjusting for patient and injury characteristics, an equivalent increase in score on each scale was associated with longer time to clearance (SCAT-3 hazard ratio 0.885, 95%CI 0.835-0.938, $p < 0.001$; functional impairment scale hazard ratio 0.851, 95%CI 0.802-0.902, $p < 0.001$). A concussion symptom scale based on degree of functional impairment correlates strongly with the SCAT-3 scale and demonstrates a similar association with time to clearance. By assessing the degree of impact on clinical functioning, this symptom scale reflects a more intuitive approach to rating symptoms and can be used in the management of concussion.

Keywords : checklist, concussion, neurology, scale, sports, symptoms

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